CLAIMS

What is claimed is:

1. A probe for measurement of pulse-based differences in light absorbence across the vascularized tissue of a lip or a cheek of a patient, comprising:
   a. a resilient probe frame having an inner face and an outer face, said frame comprising a proximal arm connecting at one end to a cable and at the other end to a bridging section of said frame, said bridging section connecting the proximal arm to one end of a distal arm of said frame, wherein a portion of said distal arm is at a determined distance from an opposing portion of said proximal arm;
   b. a first pad positioned over at least two light-generating structures that emit light at at least two different wavelength bands known to differentiate oxygenated from non-oxygenated hemoglobin, on the inner face of said portion of the distal arm or of the proximal arm;
   c. a second pad positioned over at least one light-detecting structure that detects light transmitted from said first pad, on the inner face of the arm opposing the first pad; and
   d. first individual conductors for energizing said at least two light-generating structures, connecting said structures to a monitoring system for light signal production and modulation, and second individual conductors connecting said at least one light-detecting structure to said monitoring system to convey signals of light detected by said at least one light-detecting structure, said first and said second individual conductors passing within said resilient probe frame and thereafter through a cable for carrying said first and said second individual conductors to said monitoring system.

2. The probe of claim 1, additionally comprising a boot to seal the junction between said probe frame and said cable.

3. The probe of claim 2, wherein said first and second pads are dome-shaped and spaced apart to conform to the thickness of the lip or cheek tissue of a patient.

4. The probe of claim 2, wherein said probe frame is hook-shaped, and is sized to engage both sides of the lip or cheek tissue of an average pediatric patient between said first and second pads.

5. The probe of claim 2, wherein said probe frame is hook-shaped, and is sized to engage both sides of the lip or cheek tissue of an average adult patient between said first and second pads.

6. The probe of claim 2, wherein said resilient probe frame is hook-shaped and comprises material having a resiliency and memory to retain after a transient deflection the angular and dimensional relationships between the at least two light-generating structures and the opposingly at least one light-detecting structure.

7. The probe of claim 6, wherein said resilient hook-shaped probe frame is of such resiliency that the force required to move the distal end outwardly 0.25 inch is between about 1,250 to 1,550 grams of force.

8. The probe of claim 6, wherein said resilient hook-shaped probe frame is of such resiliency that the force required to move the distal end outwardly 0.25 inch is between about 150 to 1,250 grams of force.

9. The probe of claim 6, wherein said resilient hook-shaped probe frame is of such resiliency that the force required to move the distal end outwardly 0.25 inch is between about 1,550 to 3,500 grams of force.

10. The probe of claim 6, wherein said resilient hook-shaped probe frame is of such resiliency that the force required to move the distal end outwardly 0.25 inch is between about 3,550 to 5,550 grams of force.

11. The probe of claim 1, additionally comprising a plastic covering sleeve configured to slidably fit over said probe, slidably engaging from the end of the distal arm and covering said proximal arm, wherein said covering sleeve is comprised of thin flexible material permitting light transmission at the areas covering said at least two light-generating components and said at least one light-detecting component.

12. The probe of claim 2, additionally comprising a plastic covering sleeve configured to slidably fit over said probe, slidably engaging from the end of the distal arm and covering said proximal arm and said boot, wherein said covering sleeve is comprised of thin flexible material permitting light transmission at the areas covering said at least two light-generating components and said at least one light-detecting component.

13. The probe of claim 6, additionally comprising a plastic covering sleeve configured to slidably fit over said probe, slidably engaging from the end of the distal arm and covering said proximal arm, wherein said covering sleeve is comprised of thin flexible material permitting light transmission at the areas covering said at least two light-generating components and said at least one light-detecting component.

14. A probe for measurement of pulse-based differences in light absorbence across the vascularized tissue of a lip or a cheek of a patient, comprising:
    a. a resilient probe frame having an inner face and an outer face, said frame comprising a proximal arm connecting at one end to a cable and at the other end to a bridging section of said frame, said bridging section connecting the proximal arm to one end of a distal arm of said frame, wherein a portion of said distal arm is at a determined distance from an opposing portion of said proximal arm;
    b. a first pad positioned over at least two light-generating structures that emit light at at least two different wavelength bands known to differentiate oxygenated from non-oxygenated hemoglobin, on the inner face of said portion of the distal arm or of the proximal arm;
    c. a second pad positioned over at least one light-detecting structure that detects light transmitted from said first pad, on the inner face of the arm opposing the first pad;

d. first individual conductors for energizing said at least two light-generating structures, connecting said structures to a monitoring system for light signal production and modulation, and second individual conductors connecting said at least one light-detecting structure to said monitoring system to convey signals of light detected by said at least one light-detecting structure, said first and said second individual conductors passing within said resilient probe frame and thereafter through a cable for carrying said first and said second individual conductors to said monitoring system; and

e. a means for attaching an associated device selected from the group consisting of a capnography sampler and a cannula device for the supply of oxygen or oxygen-rich gas,

wherein said means for attaching provides for reversible and adjustable engagement of said associated device.

15. The probe of claim 14, wherein said means for attaching is along the outer face of said proximal arm.

16. The probe of claim 14, additionally comprising a boot to seal the junction between said probe frame and said cable, wherein said boot comprises means for attaching.

17. A probe for measurement of pulse-based differences in light absorbence across the vascularized tissue of a lip or a cheek of a patient, comprising:

a. a resilient probe frame having an inner face and an outer face, said frame comprising a proximal arm connecting at one end to a cable and at the other end to a bridging section of said frame, said bridging section connecting the proximal arm to one end of a distal arm of said frame, wherein a portion of said distal arm is at a determined distance from an opposing portion of said proximal arm;

b. a first pad comprising at least two light-generating structures that emit light at at least two different wavelength bands known to differentiate oxygenated from non-oxygenated hemoglobin, positioned on the inner face of said portion of the distal arm or of the proximal arm;

c. a second pad comprising at least one light-detecting structure that detects light transmitted from said first pad, positioned on the inner face of the arm opposing the first pad;

d. first individual conductors for energizing said at least two light-generating structures, connecting said structures to a monitoring system for light signal production and modulation, and second individual conductors connecting said at least one light-detecting structure to said monitoring system to convey signals of light detected by said at least one light-detecting structure, said first and said second individual conductors passing within said resilient probe frame and thereafter through a cable for carrying said first and said second individual conductors to said monitoring system; and

e. integrally attached at least one member of the group consisting of a capnography sampler and a cannula device for the supply of oxygen or oxygen-rich gas.